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PATENT APPLICATION

ATTORNEY DOCKET NO. 10014091-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Huitao Luo

Confirmation No.: 6419

Application No.: 10/046,797

Examiner: Aaron Richer

Filing Date: 01/14/2002

Group Art Unit: 2676

Title: Systems and Methods for Processing Boundary Information of a Graphical Object

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on **March 28, 2005**.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

( ) (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

( )	one month	$120.00
( )	two months	$450.00
( )	three months	$1020.00
( )	four months	$1590.00

( ) The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **08-2025** the sum of **$500.00**. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

(X) I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450. Date of Deposit: 5-31-2005

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Respectfully submitted,

Huitao Luo

By _____

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Reg. No. **39,833**

Date: 5/31/05

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 10/046,797
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Inventor..... Huitao Luo
Assignee..... Hewlett Packard Company
Group Art Unit 2676
Examiner..... Aaron Richer
Attorney's Docket No. ..... PDNO. 10014091-1
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Title: Systems and Methods for Processing Boundary Information of a Graphical Object

BRIEF OF APPELLANT

To: Mail Stop Appeal Brief-Patents
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Appellant appeals from the Office Action mailed December 27, 2004 rejecting claims 1-36. The Commissioner is authorized to charge the fee required under 37 C.F.R. § 41.20(b)(2) to Deposit Account No. 08-2025.

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I. REAL PARTY IN INTEREST

The real party in interest of this application is Hewlett-Packard Development Company, L.P. as evidenced by the full assignment of the pending application to Hewlett-Packard Company recorded at Reel 012864, Frames 0902-0903 in the Assignment Branch of the Patent and Trademark Office and full assignment of the pending application to Hewlett-Packard Development Company, L.P. recorded at Reel 014061, Frames 0492-0603 in the Assignment Branch of the Patent and Trademark Office.

II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's undersigned legal representative, and the assignee of the pending application are aware of no appeals or interferences which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-36 are pending. Claims 1-36 were rejected. The non-final rejection of claims 1-36 is being appealed.

IV. STATUS OF AMENDMENTS

Claims 1-34 were finally rejected in an Office Action dated August 12, 2003. Appellant filed an RCE on October 28, 2004 and preliminary amendment which was entered and added new claims 35-36. A non-final Office Action was issued in this application on December 27, 2004 rejecting claims 1-36. Appellant appeals the rejections of the December 27, 2004 Office Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Concise explanations of the subject matter defined in each of the independent claims and argued dependent claims involved in the appeal follow with respect to exemplary illustrative embodiments of the specification and figures.

Referring to independent claim 1, an exemplary computer system 200 of Fig. 2 is described beginning at page 4, paragraph 0024 of the specification according to one embodiment. Boundary information is depicted in Fig. 3 and described

starting at paragraph 0029. The system may utilize code of paragraph 0026 and shown in Fig. 10 to implement at least some of the image processing aspects of Figs. 3-9 and 11-12. Vertices are illustrated in Fig. 3 and contours are depicted in Fig. 4. Method steps of Figs. 6 and 8 describe processing within a distortion criterion starting at paragraph 0038.

Referring to dependent claim 4, Fig. 4 and the discussion starting at paragraph 0031 of the specification discusses the shortest path according to one embodiment.

Referring to dependent claims 25, 29, and 34, Fig. 8 depicts a flowchart described starting at paragraph 0066 for defining an object boundary according to one embodiment. Steps 803 and 804 including user interaction are described at paragraphs 0067 and 0068.

Referring to dependent claims 27 and 36, a graphical image 300 having an area and boundary information is depicted in Fig. 3 and described starting at paragraph 0029 of less than the area of the graphical image.

Referring to dependent claims 24 and 28, it is stated that the parameter w may be selected to represent a trade-off between rate and distortion according to one embodiment. Further, user interaction with respect to vertices and width selection is described at paragraph 0067 of step 803 of Fig. 8 according to one embodiment.

Referring to independent claim 12, boundary information of a graphical image 300 is depicted in Fig. 3 and described starting at paragraph 0029. Image processing aspects according to exemplary embodiments are described in Figs. 3-9 and 11-12. Vertices are illustrated in Fig. 3 and contours are depicted in Fig. 4. Method steps for Fig. 6 describe processing within a distortion criterion starting at paragraph 0038. Exemplary user interaction is discussed with respect to steps 803 and 804 of Fig. 8 starting at paragraph 0067. Exemplary data structures are described at step 804 of Fig. 8. Exemplary conversion according to one embodiment is described with respect to step 806 of Fig. 8.

Referring to dependent claim 35, paragraph 0002 discusses extraction such as cutting and pasting graphical information inside a shape onto a new background.

Referring to independent claim 20, vertex identification and contour detection is described according to one embodiment in Figs. 6 and 8 of the application. In

addition, paragraphs 0053 and 0055 of the specification describe exemplary weighting and shortest path aspects according to one embodiment. Exemplary optimization is described in paragraph 0048 and minimizing variance is described starting at paragraph 0090.

Referring to independent claim 33, exemplary structure of a computing system is illustrated in Fig. 2 described beginning at page 4, paragraph 0024 of the specification according to one embodiment. Vertices are illustrated in Fig. 3 and contours are depicted in Fig. 4. Method steps of Fig. 6 describe processing within a distortion criterion starting at paragraph 0038 and additional processing aspects are described with respect to Fig. 8 according to one embodiment.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. The 103 rejection of claims 1-19, 25-30, and 33-36 over Kim and Suzuki.

B. The 103 rejection of claims 1-19, 25-30, and 33-36 over Kim and Suzuki.

C. The 103 rejection of claims 12-19, 29-30 and 35-36 over the combination of Kim and Suzuki.

D. The 103 rejection of claims 33-34 over the combination of Kim and Suzuki.

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F. The 103 rejection of claim 28 over the combination of Kim, Suzuki and Ikezawa.

G. The 103 rejection of claim 4 over the combination of Kim, Suzuki and Catros.

H. The 103 rejection of claim 35 over the combination of Kim and Suzuki.

I. The 103 rejection of claims 20-24 and 31-32 over the combination of Catros and Makram-Ebeid.

J. The 103 rejection of claims 20-24 and 31-32 over the combination of Catros and Makram-Ebeid.

K. The rejection of claim 24 over the combination of Catros, Makram-Ebeid and Luo.

VII. ARGUMENT

A. The rejection of claims 1-19, 25-30, and 33-36 over Kim and Suzuki is improper because there is no motivation to combine the references.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See, e.g., MPEP §2143 (8th ed.).

Referring to claim 1, the Office states on page 4 of the Office Action dated December 27, 2004 (hereinafter "Action" or "Office Action") that U.S. Patent No. 5,774,595 to Kim (hereinafter "Kim") fails to disclose individual contours being detected responsive to user input of a user as positively claimed in claim 1. The Office relies upon the teachings of Suzuki to cure the deficiencies of Kim. The reliance is misplaced inasmuch as the Office has failed to establish proper motivation for combining the reference teachings as is required for a proper prima facie 103 rejection. The claims are allowable for at least this reason.

The legal concept of *prima facie* obviousness is a procedural tool of examination and allocates who has the burden of going forward with production of evidence in each step of the examination process. MPEP §2142 (8th Ed., revision

no. 2). MPEP §§2142 and 2143 (8th Ed., revision no. 2) address this legal concept extensively and provide that the **examiner bears the initial burden** of factually supporting any *prima facie* conclusion of obviousness, that is, the initial burden is on the examiner **to provide some suggestion of the desirability** of doing what the inventor has done. MPEP §2142. Appellant respectfully submits that the Office has failed to meet their burden.

As discussed below, Appellant respectfully submits Kim and Suzuki are directed towards different systems and methods which are concerned with different problems, and accordingly provide different solutions to the respective different problems. Appellant respectfully submits that the Office has failed to meet their burden of establishing proper motivation and the 103 rejection of the claims is improper for at least this reason. Appellant submits for at least the following reasons one of skill in the art would not be motivated to look to combine the teachings of Suzuki with the teachings of Kim and the 103 rejection of the claims is improper and should be withdrawn.

More specifically, Kim is directed towards a method of representing a contour of an object for a ***video signal encoder***. As set forth in col. 1, line 12 - col. 2, line 2 of Kim, some applications (e.g., high definition television) need a large amount of data to define each frame while the bandwidth of conventional communication channels may be limited. Kim states that it is inevitable to compress or reduce the volume of data through the use of compression techniques. Kim describes prior art polygonal approximation and B-spline approximation methods, and the respective disadvantages thereof and then provides as set forth in col. 1, line 65 - col. 2, line 2, an *improved contour approximation method for use in a* ***video signal encoder*** *capable of reducing approximation errors in the encoded contour information*.

Suzuki is directed towards systems and methods for identifying a contour for *extraction of an object from an image frame* as is disclosed at col. 1, lines 10-36. More specifically, Suzuki is directed towards facilitating selection of an objection so the object may be *extracted and edited*. Suzuki discloses that a contour of a desired object is detected at col. 1, lines 29+. Disclosed examples of objects of frames include automobiles and humans. Once the contour of the object is identified, the object may be extracted from the image frames of a motion picture.

As set forth in col. 1, lines 25, *editing* may be implemented upon extracted objects including color-changing, enlargement, reduction, transfiguration, composition and/or recognition as also set forth in col. 6, lines 20+. As set forth in Suzuki at col. 10, lines 47+, a user may select how to modify extracted image data including uniformly filling either the inside or the outside of the contour with prescribed image data. As set forth in col. 11, lines 7+ of Suzuki, either the inside or the outside of the object may be masked or the inside of the object may be filled with a prescribed color.

As is clear from the above, Kim and Suzuki are directed towards entirely different systems and methods for achieving different results and solutions for different problems. More specifically, Kim is directed towards an encoding system for reducing the volume of data to be communicated in view of limitations in communications bandwidth. Kim *encodes image data of frames* to improve the communications of the image data (i.e., compress the image data of frames to transmit image data using devices of limited bandwidth as set forth in col. 1, lines 17 of Kim). Kim is not concerned with selection, extraction or user editing of objects by a user inasmuch as Kim encodes image data of entire frames. It is non-sensical to modify Kim to provide user selection of objects in Kim in view of Kim's encoding of image data of frames and Kim is not concerned with extraction of objects for user editing. Further, the modification to Kim proposed by the Office would increase the complexity of Kim to accommodate user input with no improvement or improved result with respect to concerns of Kim. Further, permitting user interaction in the encoding of frames of data of Kim would slow the encoding process to unacceptably slow speeds.

Because Kim is not concerned with selection, extraction or editing of objects by a user, there is no motivation to combine the teachings of Suzuki regarding user input to designate object-contour detection (col. 5, lines 5+ of Suzuki) or editing including color-changing, enlargement, reduction, transfiguration, composition and/or recognition. These features of Suzuki regarding editing a selected object are of no concern wherein image data of entire frames are processed for compression to improve communications of the image data. User input in Kim for detection of contours would unacceptably slow the encoding process with absolutely no benefit to the systems and methods of Kim.

Appellant has failed to identify any *apparatus in Kim to accept user input because Kim is not concerned with user input* contrary to the unsupported position of the Office. The video encoding of Kim automatically operates to compress image data of entire frames for improved communications in reduced bandwidth implementations and accordingly any user selection of an object of a frame is irrelevant to Kim and would negatively impact the operation of Kim by slowing processing to accept user commands, to identify and extract objects which are of no concern to Kim or address problems which are not of concern to Kim.

In addition, Appellant has electronically searched Suzuki and has failed to uncover any teachings regarding video encoding. Suzuki is directed towards extraction of objects for subsequent modification and user editing of the objects and not encoding frames to improve communications in limited bandwidth applications. Fundamentally, encoding of frames for communication disclosed in Kim and the extraction and editing of objects from a video frame in Suzuki concern different problems and the teachings of Kim and Suzuki provide solutions directed to the respective different problems. There is no evidence that one concerned with the problems of one of the references (either Kim or Suzuki) would be motivated to look to the other disparate reference for meaningful teachings inasmuch as the operations, objectives, problems and solutions of the references are entirely different.

The motivation identified on page 4 of the Action at col. 1, lines 10-24 of Suzuki "so that a user can specify a portion of the image to separate" is insufficient to support a prima facie 103 rejection. In particular, the Federal Circuit discussed proper motivation *In re Lee*, 61 USPQ 2d 1430 (Fed. Cir. 2002). The *In re Lee* court stated the factual inquiry whether to combine references must be *through and searching*. It must be based *on **objective evidence** of record*. The Court in *In re Fritch*, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992) stated motivation is provided only by showing some ***objective teaching** in the prior art or that knowledge generally available to one of ordinary skill in the art* would lead that individual to combine the relevant teachings of the references. The *Lee* Court stated that the Examiner's ***conclusory statements*** in the *Lee* case do not adequately address the issue of motivation to combine. The Court additionally stated that the factual question of motivation is material to patentability and *can not be resolved on **subjective belief***

*and **unknown authority.** The Court also stated that deficiencies of cited references cannot be remedied by **general conclusions** about what is basic knowledge or common sense. The Court further stated that the determination of patentability **must be based on evidence.***

In the instant case, ***the record is entirely devoid of any evidence to support motivation to combine the teachings apart from the bald conclusory statements of the Examiner which are insufficient for proper motivation*** as set forth by the Federal Circuit. The Office cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims but must set forth objective rationale on which it relied. As set forth above, the references are directed towards entirely different systems with teachings for solutions which are inapplicable to each other. *The Office has provided no evidence of record that any video encoder configuration encodes data of frames responsive to user input.* Appellant respectfully submits that the failure of the Office to identify any prior art of video encoding of data responsive to user input clearly illustrates the erroneous position of the Office. The selection teachings responsive to user input of Suzuki are for a different process of image extraction and user editing inapposite to the operations of encoding image data of a plurality of video frames for improved communications.

Referring again to the specific motivational rationale presented by the Office, enabling a user to specify a portion of an image to separate *may be relevant to the solution of Suzuki regarding identifying or selecting objects but is **irrelevant** to the video encoding teachings of Kim to motivate one to modify Kim per the teachings of Suzuki.* The Office has submitted no objective (or other) evidence as to why one concerned with video encoding would look to object extraction aspects of Suzuki for meaningful teachings. *Kim is not concerned with selection or extraction of a subject image from a scene but is rather concerned with compression of data content of frames to provide communications of large amounts of data over limited bandwidth resources.* There is no motivation to interject the user selection teachings of Suzuki concerning extraction of a given subject image from a scene into Kim, but rather, Kim is directed towards compression of entire scenes in plural frames. There is no motivation to combine the reference teachings and the Office has failed to establish a prima facie 103 rejection for at least this reason.

Kim is directed towards compression of image data. *The encoder arrangement of Kim is silent regarding any teaching towards selection of a portion of an image to separate as alleged by the Office on page 4 of the Action.* The record is also void of any rationale as to why Kim would be modified to allow user input for selection and separation of a portion of an image. One concerned with encoding frames of data for compression and communication of the compressed data would not look to a reference concerned with user input to select a portion of an image. The only motivation results from improper reliance upon Applicant's disclosure. However, the motivation for forming the combination must be something other than hindsight reconstruction based on using Applicant's invention as a road map for such a combination. *See, e.g., Interconnect Planning Corp. v. Feil*, 227 USPQ 543, 551 (Fed. Cir. 1985); *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990).

Furthermore, Appellant notes that they have been unable to uncover any teachings regarding how contours are identified by the arrangement of Kim. For example, Fig. 1 describes operations of compression upon received contour image data received by polygonal approximation 100 without specifying how the contour image data is generated or selected. Referring to col. 2, lines 65+, Kim states that the block diagram of Fig. 1 is for the inventive contour approximation apparatus for representing a contour image of an object expressed in a video signal with no details of how the object is identified. In view of the numerous different arrangements including automatic configurations for identifying contours and the drawbacks of requiring user intervention for selection of contours as set forth above (i.e., user intervention slows the encoding process compared with other suitable automatic encoding schemes), there is no motivation to modify Kim to arrive at the specific configuration of Appellant's invention defined by limitations of the claims reciting detection of contours responsive to user input of a user. The only motivation to go in the direction of Appellant's specifically claimed inventions in the absence of objective prior art teachings when suitable alternative exist is responsive to improper reliance upon Appellant's disclosure. Appellant submits there is no motivation to combine the reference teachings and the claims are allowable for yet this additional reason.

Appellant respectfully submits the obviousness rejection is improper for at least the above-mentioned compelling reasons. Additionally, the Office has failed to identify any objective evidence as necessary for a proper 103 rejection to support the modification. Appellant asserts that modifying Kim as proposed by the Office would render Kim unsuitable for its intended purpose of video encoding (i.e., since the video encoding would be unacceptably slowed) and accordingly there is no motivation to support the 103 rejection. At least in view of the numerous drawbacks of the extensive modification of Kim as required by the combination set forth in the Office Action, there is no motivation to modify the reference teachings in support of the rejection and the only motivation results from improper reliance upon Applicant's disclosure. The claims are allowable for at least this compelling reason.

B. The rejection of claims 1-19, 25-30, and 33-36 over Kim and Suzuki is improper because there is no reasonable expectation of success.

Kim is directed towards encoding of data for compression for later reconstruction of the data and the purpose of Kim would be destroyed if the subject matter of Kim were modified pursuant to the Office Action to permit user interaction, selection, and extraction disclosed by Suzuki. In particular, the combination would require significant modification of Kim, and require significant user intervention during operation of Kim. The encoding process of Kim modified as alleged by the Office would result in unacceptable encoding speeds to accommodate user interaction or input which would defeat the efficiencies gained by encoding in the first instance. To modify Kim per the teachings of Suzuki as alleged by the Office would destroy or frustrate the purpose of the invention of the Kim patent since at a minimum processing speeds would be drastically slowed. *In re Fitch*, 972 F.2d 1260, 1265 n.12, 23 USPQ2d 1780, 1783 n.12 (Fed. Cir. 1992) *(stating that a proposed modification is inappropriate for an obviousness inquiry when the modification renders the prior art inoperable for its intended purpose)*.

Appellant respectfully submits the Office has failed to establish a proper prima facie 103 rejection for at least this additional reason and Appellant respectfully requests withdrawal of the 103 rejection.

C. The rejection of claims 12-19, 29-30 and 35-36 over Kim and Suzuki is improper because positively recited limitations of the claims are not disclosed by the prior art even if the references are combined.

Initially, the Office alleges on pages 6-7 of the Action that Kim discloses receiving input of a contour image and transforming that image into a set of quantized transform coefficients and segment data, possibly in JPEG format in support of a position that Kim teaches the claimed converting. Appellant notes that the claimed converting comprises *converting graphical information of a **data structure** in combination with the encoding at least the vertices in the **data structure***. The quantized transform coefficients relied upon by the Office on page 6 of the Action pertain to information regarding the error between the line segment and the contour segment as set forth in col. 2, lines 17-24. The segment data includes the position of two vertices per col. 2, lines 10-11 which may be used to provide a reconstructed contour segment per col. 2, lines 25-26. Appellant respectfully submits that the coefficients and segment data are not disclosed in Kim or Suzuki as being *encoded into a data structure which is converted*. In fact, Appellant has electronically searched Kim and Suzuki and have failed to uncover any teachings to a "data structure." Accordingly, even if the reference teachings are combined, the combination fails to teach or suggest limitations of Appellant's claims and the Office has failed to establish a prima facie rejection for at least this additional reason.

Appellant additionally traverses the taking of Official Notice on page 7 of the Action. Appellant does not merely claim converting but rather *converting the graphical information of the data structure*. Appellant disagrees that the claimed converting is well known. Accordingly, Appellant traverses and seasonably challenges any reliance upon Official Notice pursuant to MPEP §2144.03 (8th ed., rev. 2) in support of the rejection of the claims.

MPEP 2144.03A (8th ed., rev. 2) provides that *official notice unsupported by documentary evidence should only be taken by the examiner when the facts asserted to be well known or to be common knowledge in the art are capable of **instant and unquestionable** demonstration as being well known*. It is ***not appropriate*** for the Office to take office notice of facts without a reference where

the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known.

The Examiner is reminded that the facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of judicial notice. See *In re Eynde*, 480 F.2d 1364, 1370, 178 USPQ 470, 474 (CCPA 1973). The Examiner is also reminded that claims are analyzed in the context of the combination of the various separately stated limitations, and not with respect to the limitations individually. Pursuant to MPEP §2144.03 (8th ed., rev. 2), Appellant respectfully submits *converting graphical information of the claimed data structure* is not well known and the claims are allowable for yet this additional reason.

D. The rejection of claims 33-34 over Kim and Suzuki is improper because positively recited limitations of the claims are not disclosed by the prior art even if the references are combined.

Pages 3-4 of the Action sets forth limitations of claim 1 and teachings of the prior art which allegedly disclose the limitations. However, the Action fails to identify limitations of claim 33 or teachings of the prior art which allegedly disclose the limitations of claim 33. In particular, claim 33 positively recites a *user interface configured to receive user input* and processing circuitry configured to detect contours between respective pairs of vertices *responsive to respective user input received via the user interface*. Appellant has failed to uncover teachings in Kim (or other prior art teachings properly combinable with Kim) regarding the claimed user interface or the claimed processing circuitry configured to detect contours responsive to user input. Appellant respectfully submits the claimed processing circuitry configured to detect responsive to user input received via the user interface is not taught by the prior art inasmuch as Kim is directed towards encoding of frames of image data and no teachings of record provide encoding operations responsive to user input. The Office has failed to establish a proper prima facie 103 rejection for at least this reason.

E. The rejection of claims 25, 29, and 34 over Kim and Suzuki is improper because positively recited limitations of the claims are not disclosed by the prior art even if the references are combined.

On pages 7-8 of the Action, the Office alleges that the limitations of the claims are inherent. Appellant respectfully disagrees. In particular, the Office *must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flow from the teachings of the applied prior art. Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Initially, Appellant submits the limitations of the claims defining different user input for individual ones of the contours do not necessarily flow from the teachings of the references inasmuch as suitable alternatives exist. For example, Appellant has failed to locate any user input information with respect to contour detection in Kim and accordingly the limitations of different user input are *not necessary* as required for proper reliance upon inherency.

Additionally, the teachings of Suzuki are contrary to the interpretation of the Office. Referring to the Abstract of Suzuki, it is stated that the *second contour detection unit detects contour points based on contour pointes detected by the first contour unit* so that object-contour data with respect to one of the subsequent images is determined. Basing the detection for subsequent images upon the first detected points illustrates that yet another alternative exists to the claimed user input being different for individual ones of the contours and the limitations do not necessarily flow from the teachings of the prior art. The Office alleges on page 8 of the Action that Suzuki teaches taking user input each time a contour is detected. As set forth above, the operations of the second detection unit do not "take user input each time a contour is detected" as baldly alleged by the Office.

Appellant respectfully submits the Office has failed to establish a proper basis in fact or technical reasoning that the claimed limitations necessarily flow from the teachings of the prior art, the limitations are not inherent and the claims are allowable for at least this reason.

F. The rejection of claim 28 over Kim, Suzuki and Ikezawa is improper because there is no motivation to combine the reference teachings.

The Office alleges on page 9 of the Action that Ikezawa discloses allowing a user to select for individual ones of the contours at least one of the respective vertices to allow a user a choice of how to detect the contour of an object if the object is complicated in shape referring to the teachings of Ikezawa. However, there is no *objective evidence* of record that Kim or Suzuki suffer from an inability to process "complicated shapes" to motivate one to look for other references for meaningful teachings. Appellant respectfully submits that one of skill in the art would not look for solutions to problems which are not of concern to Kim or Suzuki. Kim is not concerned with selection of contours let alone concerned with alleged problems regarding detection of contours having complicated shapes. There is absolutely no objective evidence to support the combination and the Office has failed to establish a proper prima facie rejection of the claims for at least this reason.

G. The rejection of claim 4 over Kim, Suzuki and Catros is improper because there is no motivation to combine the reference teachings.

The Office Action on page 10 states that Catros used amplitudes of gradients as weights and reducing the contour detection problem to a shortest path problem. Initially, Applicant submits Catros is directed towards issues related to ***bridging between disjointed contour elements***. There is absolutely no motivation for one concerned with ***video encoding of known complete boundary image data*** of Kim to look to the disparate Catros teachings regarding bridging of disjointed contour elements for meaningful teachings. Further, **the mere fact that references *can* be combined or modified does not render the resultant combination obvious *unless the prior art also suggests the desirability of the combination***. MPEP §2143.01 (8th ed., rev.2). Kim already provides teachings regarding encoding of video signals including contour data and accordingly is not concerned with nuances of contour identification. But for improper reliance upon Appellant's disclosure, there is no objective evidence of motivation for one to look to other reference teachings or otherwise modify the teachings of Kim. Appellant respectfully submits the rejection of claim 4 is improper for at least this additional reason.

H. The rejection of claim 35 over Kim and Suzuki is improper because there is no motivation to combine the reference teachings.

Kim is concerned with *compression of data* including previously identified contours and is not concerned with *extraction of graphical information defined by the boundary information from the graphical image* as claimed. There is no motivation to modify Kim to arrive at the claimed step of extracting the graphical information in view of the compression teachings of Kim. The Action fails to recite any motivation for modifying Kim, let alone the requisite objective evidence for supporting a prima facie 103 rejection. The mere fact that a reference may be modified is insufficient unless there is motivation to do so. The Office has failed to allege any motivational rationale or cite any objective evidence in support of the rejection. Appellant respectfully asserts that claim 35 is allowable for at least this compelling reason.

I. The rejection of claims 20-24 and 31-32 over Catros and Makram-Ebeid is improper because there is no motivation to combine the references.

Referring to the rejection of claim 20 on pages 17-19 of the Action, there is no proper motivation to combine the reference teachings and accordingly the Office has failed to establish an appropriate prima facie obviousness rejection for at least this reason.

In particular, the Office Action states that Catros fails to disclose regions defined by a scale parameter as well as contours associated with scale parameters as claimed. The Office relies upon the teachings of Makram-Ebeid (hereinafter "Makram") to cure the deficiencies of Catros. Appellant respectfully submits the reliance is misplaced.

It is stated on page 18 of the Office Action that Markram discloses a method of merging regions, in which each region and contour is created at, and therefore associated with a certain scale parameter. Initially, Applicants submit they have electronically searched Makram and have failed to uncover any teachings directed to contours therein. The motivational rationale is not supported by the objective evidence of record.

The Office continues that the motivation for using the method of Makram is that it eliminates the largest possible number of interfaces to merge adjacent

regions whose intensities are practically identical with reference to col. 1, lines 37-45 of Makram. Appellant submits the reasoning provided with respect to col. 1 of Markram *is with respect to problems or concern of Makram which are of no concern to Catros to motivate one of skill in the art to look to Makram for meaningful teachings* for modifying the primary Catros reference. In particular, the teachings of col. 1 of Makram fail to support the motivational rationale provided by the Office. Appellant has electronically searched Catros and have failed to identify any teachings regarding merging, merging of regions, or merging of regions whose intensities are practically identical. As set forth by the Federal Circuit in *Lee*, conclusory statements are not sufficient to establish proper motivation. The teachings of Makram are not relevant to solutions of problems of Catros and one of skill in the art concerned with the Catros teachings would not be motivated to look to Makram for meaningful teachings. The Office fails to identify objective evidence to support the combination of references.

Thereafter, the Office, without objective evidence support, continues on page 18 of the Action that it is appropriate to modify Catros to include a scale parameter to merge similar adjacent regions to aid in correctly identifying contours. Catros is concerned with bridging disjointed ends and Appellant has failed to identify ***any disclosure in Catros regarding regions or merging of regions as erroneously alleged in the Action***. There is no evidence of record that one concerned with the specific problem of *bridging disjointed edges* would look to a reference which discloses disparate teachings regarding *merging of regions* for meaningful teachings.

On pages 2-3 of the Action, the Office disagrees with Appellant's position that one of skill in the art concerned with bridging disjointed ends would not look to merge regions. The Office continues to state on page 3 that contours in general define regions and thus one would look to references that process regions to improve an invention that connected contours. Appellant respectfully submits that the bald cursory statement on page 3 of the Action is *not supported by any objective evidence of record*. The statement can only result from subjective conclusions of the Examiner or unknown authority which have been found to be insufficient for a proper 103 rejection. The Office baldly alleges that teachings regarding references that process regions may be used to improve an invention that

connected contours. However, the Office recites no objective evidence of record that a reference that processes regions would improve a reference concerned with connecting contours. Appellant submits there has been no deficiency of Catros identified by the Office which would allegedly be "improved" by the teachings of Makram. There is no evidence that any improvement would result to a contour connecting disclosure merely by references "that process regions." Appellant respectfully submits the motivational rationale is not supported by the objective evidence of record and the 103 rejection is improper.

Pages 18-19 of the Action continue that Makram allegedly discloses the claimed selecting step defined in claim 20. The Action states Makram describes incrementing of a scale parameter until an optimum level is reached and an Energy function is described that includes a variance term which is minimized based on the scale parameter. However, there is no motivation recited in the Action, let alone motivation properly supported by objective evidence of record, to support modification of Catros to arrive at the selecting step recited in claim 20. The mere fact that another reference may disclose a limitation absent from a primary reference is insufficient to combine the references. Assuming *arguendo*, even if the disparate teachings of the different references were considered to be technically combinable, there is no motivation to combine the teachings. The mere fact that references *can* be combined or modified does not render the resultant combination obvious *unless the prior art also suggests the desirability of the combination*. MPEP §2143.01 (8th ed., rev. 2) *citing In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

For at least the above-mentioned compelling reasons, Appellant respectfully submits the Office fails to establish a proper motivational rationale for a prima facie 103 rejection of the claims. In particular, limitations of the claimed detecting and selecting defined in claim 20 are absent from the teachings of Catros. Appellant respectfully submits the conclusory, subjective motivational rationale relied upon by the Office fails to motivate one of skill in the art to combine the teachings of the prior art references, especially in consideration of the extensive modification to Catros required to arrive at the method defined in the claims in view of the numerous limitations of claim 20 absent from Catros. The rejection is not

supported by objective evidence of record and Appellant respectfully submits the claims are allowable for at least this reason.

J. The rejection of claims 20-24 and 31-32 over Catros and Makram-Ebeid is improper because positively recited limitations of the claims are not disclosed by the prior art even if the references are combined.

Claim 20 recites defining a plurality of contours between two vertices by determining a respective shortest path between the two vertices, and the respective shortest path being weighted by gradient calculations of the graphical image over regions defined at least by a scale parameter and each contour being associated with a respective scale parameter of a plurality of scale parameters. The Office recites teachings of Makram regarding a scale parameter lambda in support of the prima facie 103 rejection. At page 18 of the Action, the Office recites teachings of Makram regarding merging regions which minimize an energy function. However, there is teaching of detecting contours between two vertices by *determining a respective shortest path*. There is no teaching of *weighting the respective shortest path by gradient calculations* or association of *contours with a respective scale parameter*. Even if the references are combined, positively recited limitations of claim 20 are not disclosed nor suggested by Catros or Makram and the Office has failed to establish a proper 103 rejection of the claims for at least this reason.

Claim 20 also defines selecting an optimal scale parameter by *determining a scale parameter that **minimizes variances** between regions defined by its respective contours*. The Office relies upon teachings of Makram as allegedly teaching the claimed selecting. Makram discloses *minimization of an Energy term* as set forth in the background of Makram. However, the Office has failed to identify any teachings that minimization of the Energy term of Makram discloses minimization of variance between regions defined by its respective contours as claimed. Further, Appellant has only located intensity variance teachings in Makram which have not been demonstrated by objective evidence of record to disclose or suggest the claimed variances between regions defined by the respective contours.

Appellant respectfully submits that even if the teachings of Makram are combined with the teachings of Catros, the Office has failed to establish that the

combination teaches at least the above-recited limitations of the claims and the rejection is improper for at least this additional reason.

More specifically, 37 C.F.R §1.104(c)(2) provides that the pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified. Further, 37 C.F.R. §1.104(c)(2) states that the Examiner must cite the best references at their command. When a reference is complex or shows or describes inventions other than that claimed by Applicants, the particular teachings relied upon must be designated as nearly as practicable. Appellant respectfully submits that the Office has failed to establish that the limitations of claim 20 are disclosed by the combination of reference teachings even if Makram is combined with Catros and the rejection of the claims is improper for this additional reason.

K. The rejection of claim 24 over Catros, Makram-Ebeid and Luo is improper because there is no motivation to combine the reference teachings.

The teachings of Catros at Fig. 1 and cols. 2-3 are identified as disclosing the rectangular area specified in claim 23. Claim 24 recites the *width parameter of the rectangular area is selected by a user interface*. Catros specifically recites usage of a square having side dimensions *D equal to the distance separating the two points A and B of the ends of the discontinuity* as specifically disclosed in col. 2, lines 63-69 of Catros. Modifying Catros pursuant to the rejection of claim 24 to accommodate selection by a user interface is directly contrary to the explicit teachings of Catros reciting selection corresponding to the distance D separating the two points A and B. Such teaching away is the antithesis of the art's suggesting that the person of ordinary skill go in the claimed direction. Essentially, teaching away from the art is a *per se* demonstration of lack of obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

The specific teachings of Catros indicate that one of skill would not be motivated to combine the reference teachings of Luo. Appellant respectfully asserts that the bald cursory motivation recited on page 21 of the Action that the modification is appropriate to include a user interface in order to simplify the task of segmentation is not supported by objective evidence and is insufficient to overcome the explicit teachings of Catros which are contrary to the combination. There is no objective evidence of record that the disclosure of Catros modified per Luo would

be "simplified" as baldly alleged by the Office. The lack of evidence to support the combination of references in combination with the teaching away of Catros illustrate the inappropriate rejection of claim 24 and Appellant requests allowance of claim 24.

L. Conclusion

In view of the foregoing, reversal of the rejections of the claims 1-36 is respectfully requested. For any one of the above-stated reasons, the rejections of the respective claims should be reversed. In combination, the above-stated reasons overwhelmingly support such reversal. Accordingly, Appellant respectfully requests that the Board reverse the rejections of claims 1-36.

Respectfully submitted,

Date: 5/31/05

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VIII. APPENDIX A – THE CLAIMS INVOLVED IN THIS APPEAL

1. [Previously Presented] A system for processing boundary information of a graphical object, comprising:

code for receiving a graphical image that comprises said graphical object , wherein said graphical object is defined by at least said boundary information;

code for detecting a plurality of contours between respective pairs of points of said graphical image, wherein individual ones of the contours are detected responsive to respective user input of a user; and

code for determining a plurality of vertices from said boundary information, wherein respective contours, which are between adjacent vertices of said plurality of vertices and are detected by said code for detecting, approximate respective edges of said boundary information within a distortion criterion.

2. [Previously Presented] The system of claim 1 further comprising:

code for creating an approximated boundary utilizing at least said graphical image, said plurality of vertices, and said code for detecting.

3. [Previously Presented] The system of claim 1 wherein the code for detecting comprises a predetermined function operable to calculate gradients associated with said graphical image.

4. [Original] The system of claim 3 wherein said code for detecting is operable to determine a shortest path between said pair of points, wherein said shortest path is weighted by said calculated gradients.

5. [Original] The system of claim 4 wherein said code for detecting limits its determination of the shortest path to a rectangular area defined in part by a width parameter.

6. [Original] The system of claim 3 wherein said calculated gradients are calculated over respective spatial areas of said graphical image limited by a scale parameter.

7. [Original] The system of claim 1 wherein said code for detecting implements a Rubberband function in executable instructions.

8. [Original] The system of claim 1 wherein said code for determining only analyzes points of said boundary information that are associated with respective edges that are less than a heuristic value.

9. [Original] The system of claim 1 wherein said code for determining only analyzes vertex pairs associated with edges of an edge set that is a weighted acyclic graph.

10. [Original] The system of claim 1 wherein said code for determining a plurality of vertices only analyzes vertices from a searchable set of vertices.

11. [Original] The system of claim 1 wherein said searchable set of vertices only includes: (a) vertices associated with curvature greater than a first heuristic value and (b) vertices recursively grown by maximizing distances between adjacent vertices subject to the following constraints: (i) said maximizing distances are less than a second heuristic value and (ii) each contours between adjacent vertices detected by said code for detecting approximate respective edges of said boundary information within a distortion criterion.

12. [Previously Presented] A method for processing boundary information of a graphical object, comprising:

receiving a graphical image that comprises said graphical object, wherein said graphical object is defined by at least said boundary information;

determining a plurality of vertices from said boundary information, wherein adjacent vertices of said plurality of vertices are associated with

respective contours that approximate respective edges of said boundary information within a distortion criterion, wherein said respective contours are detected by analysis of said graphical image by a predetermined function and responsive to different user input for respective individual ones of the contours;

encoding at least said plurality of vertices in a data structure to represent said boundary information; and

converting graphical information of the data structure from a first format to a second format different than the first format.

13. [Original] The method of claim 12 wherein said predetermined function is operable to determine a shortest path between adjacent vertices, wherein said shortest path is weighted by gradients calculated from said graphical image.

14. [Original] The method of claim 13 wherein said predetermined function is operable to determine said shortest path from only a spatial area defined by at least a width parameter.

15. [Original] The method of claim 13 wherein said predetermined function is operable to calculate said gradients utilizing a pixel neighborhood defined by a scale parameter.

16. [Original] The method of claim 12 wherein said determining comprises identifying a point of said boundary information that is associated with a greatest amount of curvature.

17. [Original] The method of claim 12 wherein said determining only analyzes vertex pairs associated with edges that are shorter than a heuristic value.

18. [Original] The method of claim 12 wherein said determining only selects vertices from a searchable set of vertices.

19. [Original] The method of claim 18 wherein said searchable set of vertices only includes: (a) vertices associated with curvature greater than a first heuristic value and (b) vertices recursively grown by maximizing distances between adjacent vertices subject to the following constraints: (i) said maximizing distances are less than a second heuristic value and (ii) respective contours between adjacent vertices approximate respective edges of said boundary information within a distortion criterion.

20. [Original] A method for processing boundary information associated with an object in a graphical image, said method comprising:

identifying two vertices in said graphical image;

detecting a plurality of contours between said two vertices by determining a respective shortest path between said two vertices, said respective shortest path being weighted by gradient calculations of said graphical image over regions defined at least by a scale parameter, and each contour of said plurality of contours being associated with a respective scale parameter of a plurality of scale parameters; and

selecting an optimal scale parameter from said plurality of scale parameters by determining a scale parameter from said plurality of scale parameters that minimizes variance between regions defined by its respective contours.

21. [Original] The method of claim 20 wherein said method further comprising:

encoding a boundary object utilizing said two vertices and said optimal scale parameter.

22. [Original] The method of claim 20 wherein said detecting further comprising:

incrementally detecting a contour of said plurality of contours by utilizing a threshold value, wherein said shortest path is determined by a graph searching process that limits searching of paths to distances less than said threshold value.

23. [Previously Presented] The method of claim 20 wherein said detecting a plurality of contours is operable to only select contours within a rectangular area defined by a width parameter and said two vertices.

24. [Previously Presented] The method of claim 23 wherein said width parameter and said two vertices are selected by a user interface.

25. [Previously Presented] The system of claim 1 wherein the user input is different for individual ones of the contours.

26. [Previously Presented] The system of claim 1 wherein the user input selects an area of the graphical image wherein searching for the contours is performed.

27. [Previously Presented] The system of claim 26 wherein the graphical image has an associated area, and the selected area comprises an area less than an entirety of the area of the graphical image.

28. [Previously Presented] The system of claim 26 wherein the user input selects, for individual ones of the contours, at least one of the respective vertices and a width of the area.

29. [Previously Presented] The method of claim 12 wherein the user input is different for individual ones of the contours.

30. [Previously Presented] The method of claim 12 wherein the predetermined function comprises a Rubberband function.

31. [Previously Presented] The method of claim 20 wherein the detected contours approximate respective edges of the boundary information.

32. [Previously Presented] The method of claim 31 wherein the edges of the boundary information exist before the detecting.

33. [Previously Presented] A computer comprising:

a display configured to depict a graphical image comprising a graphical object;

a user interface configured to receive user input; and

processing circuitry coupled with the display and configured to determine a plurality of vertices using boundary information of the graphical object, and to detect a plurality of contours between respective pairs of the vertices responsive to respective user input received via the user interface, wherein the contours approximate respective edges of the boundary information of the graphical object within a distortion criterion.

34. [Previously Presented] The computer of claim 33 wherein the user input is different for individual ones of the contours.

35. [Previously Presented] The method of claim 12 further comprising extracting the graphical information defined by the boundary information from the graphical image.

36. [Previously Presented] The method of claim 35 wherein the extracting comprises extracting a subset of the graphical information of the graphical image comprising less than an entirety of the graphical information of the graphical image.